REMARKS

Claims 2, 23 and 24 have been canceled. Claim 1 has been amended to recite that the recognition element is a sequence of peptide nucleic acids. Claims 1 and 6 have been further amended as suggested by the Examiner. New Claims 25 and 26 have been added. As the amendments find clear support in the specification as originally filed, no new matter is believed to be added.

The Applicants thank the Examiner for accepting the terminal disclaimer and withdrawing the non-statutory double patenting rejection.

Claim Objection

Claims 1 and 6 have been amended as suggested by the Examiner. Withdrawal of the objection is kindly requested.

Rejection Under 35 U.S.C. § 112

The Applicants acknowledge the rejection of Claims 23 and 24 under 35 U.S.C. § 112, first paragraph. These claims have been canceled. Withdrawal of the rejection is respectfully requested.

Rejection Under 35 U.S.C. § 102

The Applicants acknowledge the anticipation rejection of Claims 1, 4-8, 12 and 13 over Heller (U.S. Patent No. 5,849,489). This rejection is traversed. As acknowledged by the Examiner, Heller does not disclose or suggest any construct in which a the recognition element is a sequence of peptide nucleic acids. Rather than the peptide nucleic acids as claimed, Heller merely discloses DNA and RNA as the recognition portion. The Applicants invite the Examiner's attention to the following passage in Heller:

> "For purposes of this invention and unless otherwise stated, the terms 'oligonucleotide,' 'oligomer,' or 'polynucleotide' will refer generally to nucleic acids in the form of single-stranded nucleic acid polymers, comprised of DNA, RNA, or

modified sequences produced by totally synthetic procedures."[1]

Heller's disclosure does not put one in possession of the subject matter of Claims 1, 4-8, 12 and 13. Accordingly, Heller does not anticipate Claims 1, 4-8, 12 or 13. Withdrawal of the rejection is respectfully requested.

The applicants acknowledge the anticipation rejection of Claim 11 over Heller in view of Woodrum (U.S. Patent No. 4,959,305). This rejection is traversed. Like Heller, Woodrum does not disclose or suggest the peptide nucleic acids as claimed. Claim 11 incorporates the limitations of Claim 1 by its dependence therefrom. Heller, even with Woodrum, does not anticipate Claim 1: it cannot anticipate Claim 11. Withdrawal of this rejection is warranted.

Rejection Under 35 U.S.C. § 103

The Applicants acknowledge the obviousness rejection of Claims 2 and 3 over Heller in view of Coull (U.S. Patent No. 6,355,421). This rejection is traversed. There is no motivation to combine the references as suggested by the Office, and there is no expectation of success even if one were so motivated.

As acknowledged by the Examiner, Heller does not teach peptide nucleic acids. On the contrary, Heller provides ample reasons in support of DNA and RNA. The following passage from Heller is informative:

> "***Important advantages*** of synthetic DNA as the support structure for providing the array to orient multiple donors and acceptor in a transfer structure are: (1) rapid synthesis with automated instruments, in lengths from 2 to 150 nucleotide units (0.7 nm to 50 nm); (2) programmable recognition with high specificity, via their nucleotide sequence; (3) easily modified with fluorophores, chromophores, affinity labels, metal chelates, and enzymes; (4) modifiable at any position in their sequence, and at several places within the base unit; (5) modifiable backbone structure to produce different properties (example; normally negatively charged DNA can be made in a neutral form); (6) linkable both covalently and noncovalently to solid surfaces: glass, metals, silicon, organic polymers, and bio-polymers; (7) reversible organizational properties; (8) ability to form three dimensional and branched structures; and (9) well understood and easily modeled structural and organizational properties."[2] (Emphasis added).

[1] Heller column 7, lines 47-52.
[2] Heller paragraph bridging columns 5-6.

One reviewing Heller's disclosure above would not be motivated to use anything other than DNA or RNA for a recognition portion. One reviewing Heller's disclosure would not be motivated to either use peptide nucleic acids or substitute them for Heller's DNA or RNA, in sharp contrast to what is asserted by the Office.

The Office relies on Coull to remedy Heller's deficiency of peptide nucleic acids. This reliance is misplaced, however. Coull does not provide any motivation to substitute Heller's DNA with peptide nucleic acids, in contrast to what is asserted by the Office. Coull does not disclose or suggest that peptide nucleic acids are equivalent to DNA or could be substituted for DNA. Indeed, Coull highlights the differences between peptide nucleic acids and other nucleic acids. The Applicants invite the Examiner's attention to the following passages in Coull:

> "Despite the ability to hybridize to nucleic acid in a sequence specific manner, there are ***many differences*** between PNA probes and standard nucleic acid probes. These differences can be conveniently broken down into biological, structural, and physico-chemical differences. As discussed in more detail below, these biological, structural, and physico-chemical differences ***may lead to unpredictable results*** when attempting to use PNA probes in applications were nucleic acids have typically been employed. This ***non-equivalency*** of differing compositions is often observed in the chemical arts."[3] (Emphasis added).
>
> "Structurally, PNA also differs ***dramatically*** from nucleic acid."[4] (Emphasis added).
>
> "The physico/chemical differences between PNA and DNA or RNA are also ***substantial.***"[5] (Emphasis added).

In contrast to the position advanced by the Office, one reviewing the above passages in Coull would not led to the conclusion that the nucleic acids of Heller could be easily or reliably substituted by peptide nucleic acids. It is more likely that one of ordinary skill, having reviewed the above passages in Coull, would look upon such substitution with skepticism. This, combined

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[3] Coull column 6, lines 1-13.
[4] Coull column 6, lines 25-26.
[5] Coull column 6, lines 52-53.

with the complete lack of any motivation in Heller, would not lead one of ordinary skill to the present claims. If anything, the combined teachings of Heller and Coull would result in confusion, not the subject matter as claimed. Accordingly, the claimed subject matter is not obvious over Heller and Coull alone or in combination. Withdrawal of the rejection is warranted.

The Applicants acknowledge the obviousness rejections of Claim 9 over Heller alone, of Claim 10 over Heller in view of Chen, and of Claim 22 over Heller in view of Chick. These rejections are traversed. Each of these claims depends either directly or indirectly from Claim 1. None of the secondary references cure the lack of any teaching of peptide nucleic acids in Heller, and none would be sufficient to sustain an obviousness rejection of Claim 1. Accordingly, the subject matter of the dependent claims is not obviated by Heller alone or in combination with Chen or Chick. Withdrawal of the rejections is respectfully requested.

Conclusion

This application is now believed to be in immediate condition for allowance. The claims present patentable subject matter, and the Examiner is kindly requested to pass this application to issue. Should the Examiner wish to discuss this case or have any suggestions to place it into even better condition for allowance, he is kindly invited to contact the Applicants' below-signed representative by telephone at the number provided.

Respectfully submitted,

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